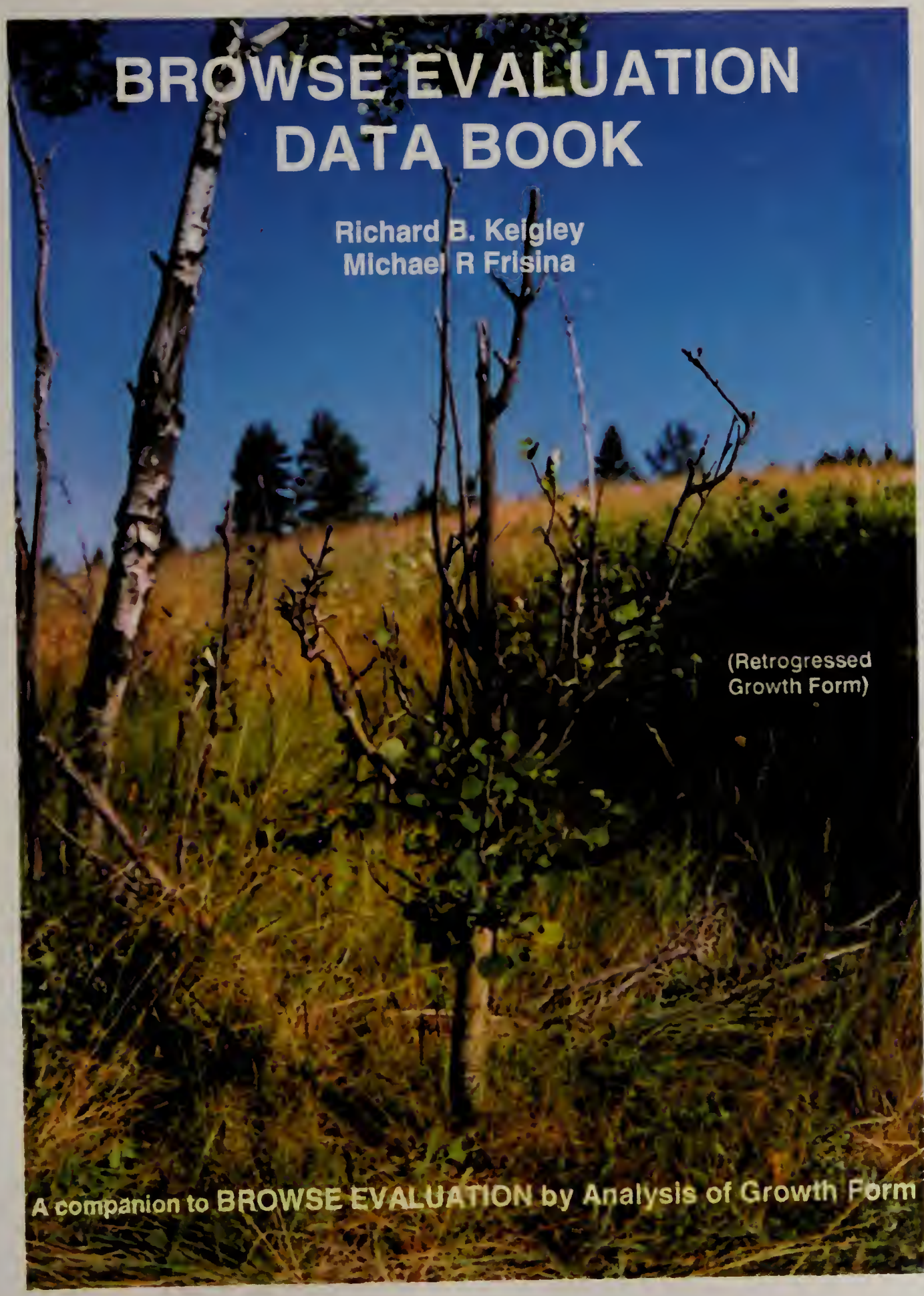

Set 2
Set 3
Supplemental Pages

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BROWSE EVALUATION DATA BOOK

A field companion to Browse Evaluation by Analysis of Growth Form

Richard B. Keigley
Michael R. Frisina

1999

The development of this fieldbook was a cooperative project funded by the Biological Resources Division of the US Geological Survey, Montana Fish, Wildlife & Parks, and the Rocky Mountain Elk Foundation

Set 1

Introduction

This companion to BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM by R.B. Keigley and M.R. Frisina contains data sheets and materials to conduct architecture-based surveys of browse condition.

This collection of data sheets has two purposes. First, we want to make browse surveys more convenient. Second, we suggest some kinds of information that we believe will increase the utility of your survey, both for you and for those who will use your surveys in the future.

BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM organizes surveys into two levels. A survey at the *reconnaissance level* primarily documents the current level of browsing. A survey at the *comprehensive level* addresses the question, "Will browsing allow young plants to attain the stature typical of their species?" The difference between the survey levels is described in pages 1 - 3 of that book.

A survey is based on data taken from 20 plants at a *sample site*. A sample site would be a few hundred square meters in area. To expand the survey beyond a single location, one would collect data from multiple sample sites within a *sample area*. A sample area might be several thousand square meters in area. Surveys involving large management units may require measurements from several sample areas. The total area covered by the survey, whether it be a single sample site or many sample areas, is called the *survey area*.

There are seven parts to the data sheet materials contained in this looseleaf binder:

1. Location of Survey Area Within Region
2. Location of Sample Areas Within Survey Area
3. Location of Sample Sites within Sample Areas
4. Sample Area Photographs.
5. Qualitative Browsing History
6. Qualitative Browsing History Photographs
7. Sample Site Data Sheets

We have included three sets of data sheets, each set consisting of seven pages. For surveys that have more than a single sample site, you will need to add additional pages to the set. Additional data sheets for parts 3, 4, 5, 6, and 7 are located in the back of the looseleaf binder. Below are some notes on each of the parts.

Part 1: Location of Survey Area Within Region

This page documents three kinds of information. First, an identifying name is assigned to the survey. This identifying name will appear on all data sheets. Second, the page provides a place to describe the general geographic region of the survey. You should assume that, someday, someone not familiar with the area may wish to visit the sites you measured. Consider the kinds of information that might make this possible. Finally, this page provides a place to record why the survey was done.

On the original set of data sheets, the page numbers are followed by an "a." Additional pages for section are identified by the same page number followed by the next letter.

We anticipate that all this information for Location of Survey Area Within Region can be recorded on a single page. If more than one page is required, use the sheet marked "Additional Notes" that is included in the back of the binder. Fill in the appropriate page number at the bottom (1b in this case).

Part 2: Location of Sample Areas Within Survey Area

Sketch a map of the survey area that shows the locations of the sample areas. Page 69 of BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM shows an example of this kind of map.

If possible, determine the GPS coordinates of each sample area. These coordinates could be taken at each sample area photo station (see Part 4, Sample Area Photographs). If it is not possible to take GPS coordinates, include a narrative that will enable others to locate your sample areas.

Part 3: Location of Sample Sites within Sample Areas

Sketch a map of each sample area showing the location of each sample site. Page 74 of BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM shows an example. For surveys that have more than one survey area, use additional pages located in the back of the book. Annotate the page number with a letter suffix .

If possible, the location of each sample site should be identified by GPS. There is a place to record GPS coordinates on the Sample Site Data Sheet.

Part 4: Sample Area Photographs.

It may be possible to document the location of sample sites with annotated photographs. The photographs also provide a record of site conditions.

There is often a long period between the time a photograph is taken and the time the photo is processed. You may find it helpful to sketch the scene on one side of a 3 x 5 card and annotate the other side (including the roll and picture number). We have included cardstock on which to mount photographs using double-sided tape (also furnished). The card could be mounted on the cardstock in the field marking the place where the photo will eventually go. When the photo is mounted, the card may remain on the card as an explanatory note.

Part 5: Qualitative Browsing History

A qualitative history of the site can be "read" and recorded (using symbols described on page 147 of the browse book) in a short period of time (See Chapter 4). Documenting the qualitative history early in the survey process can develop an awareness of conditions that might otherwise escape notice.

Part 6: Qualitative Browsing History Photographs

An annotated photographic record of the browsing history documents the evidence upon which you based your browsing history. For example, if you determine that browsing intensity has increased within the past decade, take photographs that show older uninterrupted-growth-type trees along-side younger arrested- or retrogressed-type individuals. Examples are shown on pages 57 and 59 of BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM.

As described above, use the 3 x 5 cards as a reminder of what you saw in the field while the photos are being processed.

Part 7: Sample Site Data Sheets

If possible, identify the location of the Sample Site by GPS coordinates.

Record the measurements of 20 plants on the Sample Site Data Sheet. In the case of a reconnaissance level survey, only the "Intensity level" column is completed. (See Chapter 5 in BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM.)

In the case of a comprehensive level survey, the "Intensity level," H_{pyg}," and "L_c" columns are completed as the measurements are taken in the field. After each plant is measured, stem sections are collected and placed in a manila envelope labeled with the collection number. The A_s and A_c columns are completed after the annual rings are counted using a dissecting microscope. The methods are described in chapters 6 and 7 in BROWSE EVALUATION BY ANALYSIS OF GROWTH FORM.

Twenty manila envelopes are included with the looseleaf binder. To conduct a comprehensive level survey, you will need (in addition to the items supplied in this book): shears, a tape measure, and a magnifying glass.

Set 1

Browse Evaluation by Analysis of Growth Form
Part 1: Location of SURVEY AREA Within Region

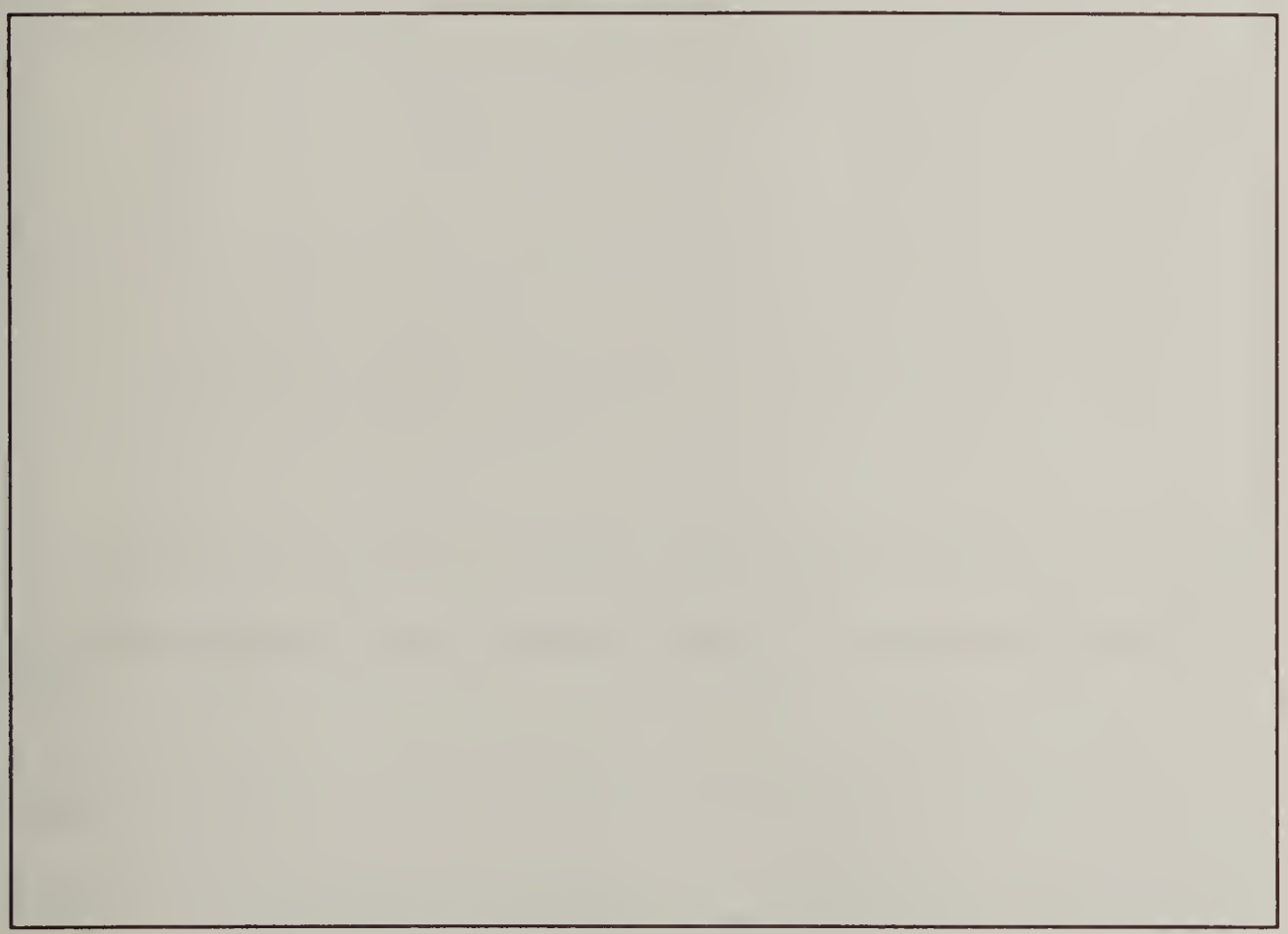
Date:_____ Completed by:_____

Survey name:_____

Survey area location (state, management unit, etc.):_____

_____

Regional Map



Map should show relationship of survey area to roads and other regional features.

Reason for survey:_____

_____

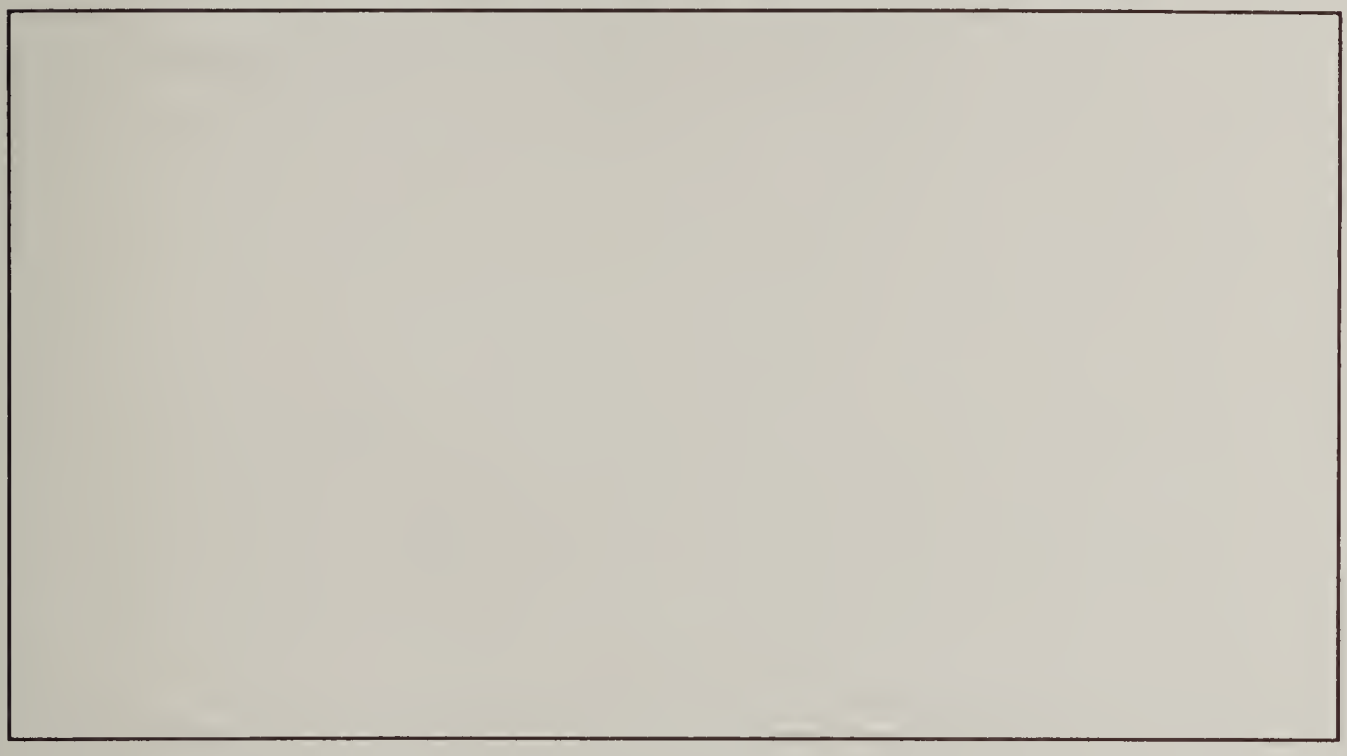
_____

Browse Evaluation by Analysis of Growth Form
Part 2: Location of SAMPLE AREAS within Survey Area

Date:_____ Completed by:_____

Survey name:_____

Map showing location of sample areas within survey area



For an example, see page 69 in Browse Evaluation by Analysis of Growth Form.

Notes:_____

_____

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_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 4: Sample Area Photographs

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates: _____

Notes:_____

_____

_____

Species: _____

_____

Oldest Youngest

Were photographs taken yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 6: Qualitative Browsing History Photographs

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Set 2

Browse Evaluation by Analysis of Growth Form
Part 1: Location of SURVEY AREA Within Region

Date:_____ Completed by:_____

Survey name:_____

Survey area location (state, management unit, etc.):_____

_____

Regional Map

Map should show relationship of survey area to roads and other regional features.

Reason for survey:_____

_____

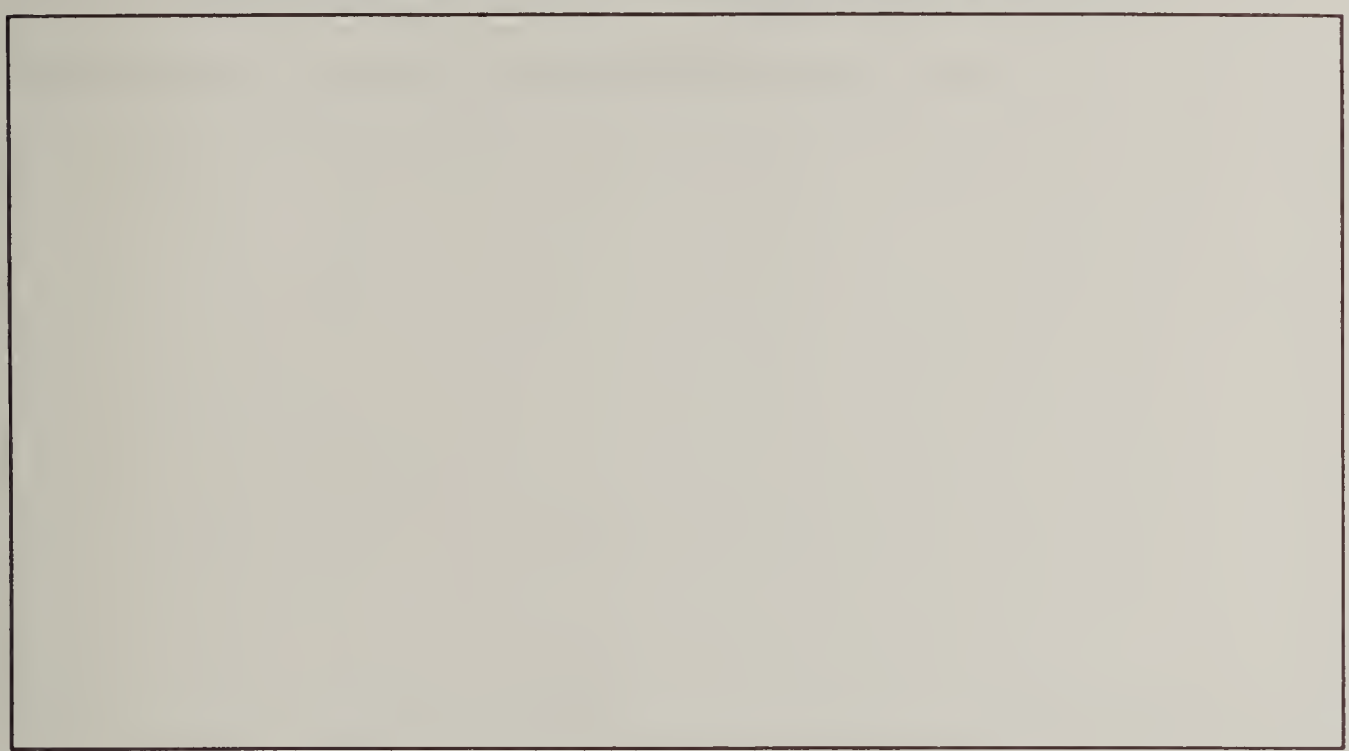
_____

Browse Evaluation by Analysis of Growth Form
Part 2: Location of SAMPLE AREAS within Survey Area

Date:_____ Completed by:_____

Survey name:_____

Map showing location of sample areas within survey area



For an example, see page 69 in Browse Evaluation by Analysis of Growth Form.

Notes:_____

_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

Browse Evaluation by Analysis of Growth Form
Part 4: Sample Area Photographs

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates: _____

Notes:_____

_____

_____

Species: _____

_____

Oldest Youngest

Were photographs taken yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Set 3

Set 3

Supplemental Pages

Browse Evaluation by Analysis of Growth Form
Part 1: Location of SURVEY AREA Within Region

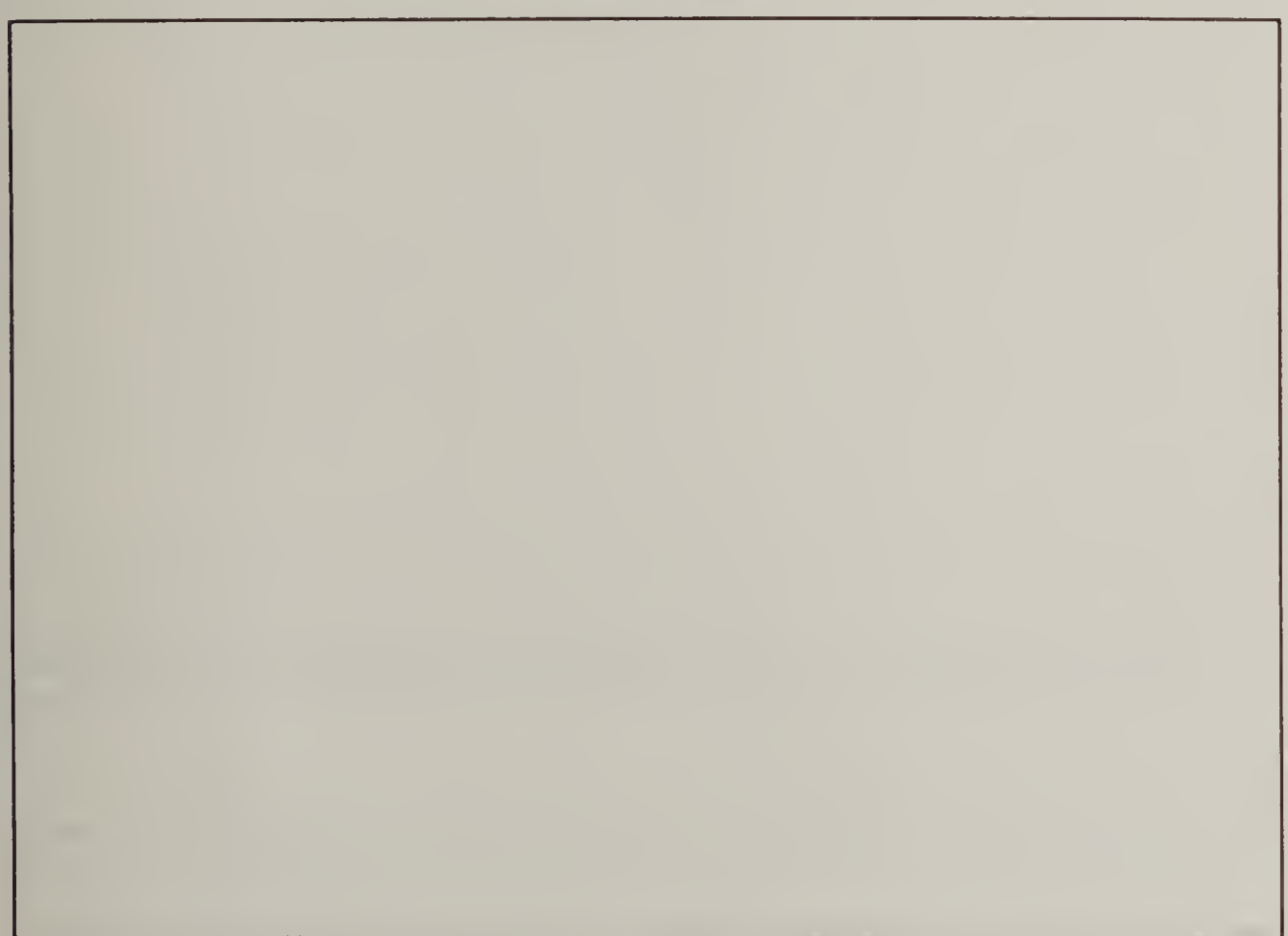
Date:_____ Completed by:_____

Survey name:_____

Survey area location (state, management unit, etc.):_____

_____

Regional Map



Map should show relationship of survey area to roads and other regional features.

Reason for survey:_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 2: Location of SAMPLE AREAS within Survey Area

Date:_____ Completed by:_____

Survey name:_____

Map showing location of sample areas within survey area

For an example, see page 69 in Browse Evaluation by Analysis of Growth Form.

Notes:_____

_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates: _____

Notes:_____

_____

_____

Species: _____

_____
Oldest Youngest

Were photographs taken yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Supplemental Pages

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 3: Location of SAMPLE SITES within Sample Areas (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Elevation:_____

Number of sample sites:_____ Photos showing location? yes / no

GPS coordinates entered on Sample Site datasheets? yes / no

Notes:_____

_____

_____

_____

_____

_____

Browse Evaluation by Analysis of Growth Form
Part 4: Sample Area Photographs (continued)

Browse Evaluation by Analysis of Growth Form
Part 4: Sample Area Photographs (continued)

Browse Evaluation by Analysis of Growth Form
Part 4: Sample Area Photographs (continued)

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates:_____

Notes:_____

_____

_____

Species: _____

_____
Oldest Youngest

Were photographs taken yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates:_____

Notes:_____

_____

_____

Species: _____

_____

Oldest Youngest

Were photographs taken yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates:_____

Notes:_____

_____

_____

Species: _____

_____

Oldest Youngest

Were photographs taken yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates:_____

Notes:_____

_____

_____

Species: _____

_____
Oldest Youngest

Were photographs taken yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____
Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 5: Qualitative Browsing History (continued)

Date:_____ Completed by:_____

Survey name:_____

Sample Area: _____ Sample Site:_____

GPS Coordinates:_____

Notes:_____

_____

_____

Species: _____

_____

Oldest Youngest

Were photographs taken yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Species: _____

_____

Oldest Youngest

Were photographs taken? yes / no

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet (continued)

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
9						
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13						
14						
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16						
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18						
19						
20						

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet (continued)

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
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10						
11						
12						
13						
14						
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16						
17						
18						
19						
20						

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet (continued)

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet (continued)

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
5						
6						
7						
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13						
14						
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16						
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18						
19						
20						

Browse Evaluation by Analysis of Growth Form
Part 7: Sample Site Data Sheet (continued)

Date:_____ **Observer:**_____

GPS Coordinates:_____

Survey Name:_____

Sample area:_____ **Sample site:**_____ **Species:**_____

Obs. #	Intensity level	H_{pyg}	L_c	Collection number	A_s	A_c
1						
2						
3						
4						
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Browse Evaluation by Analysis of Growth Form
Additional Notes

Browse Evaluation by Analysis of Growth Form
Additional Notes

Browse Evaluation by Analysis of Growth Form
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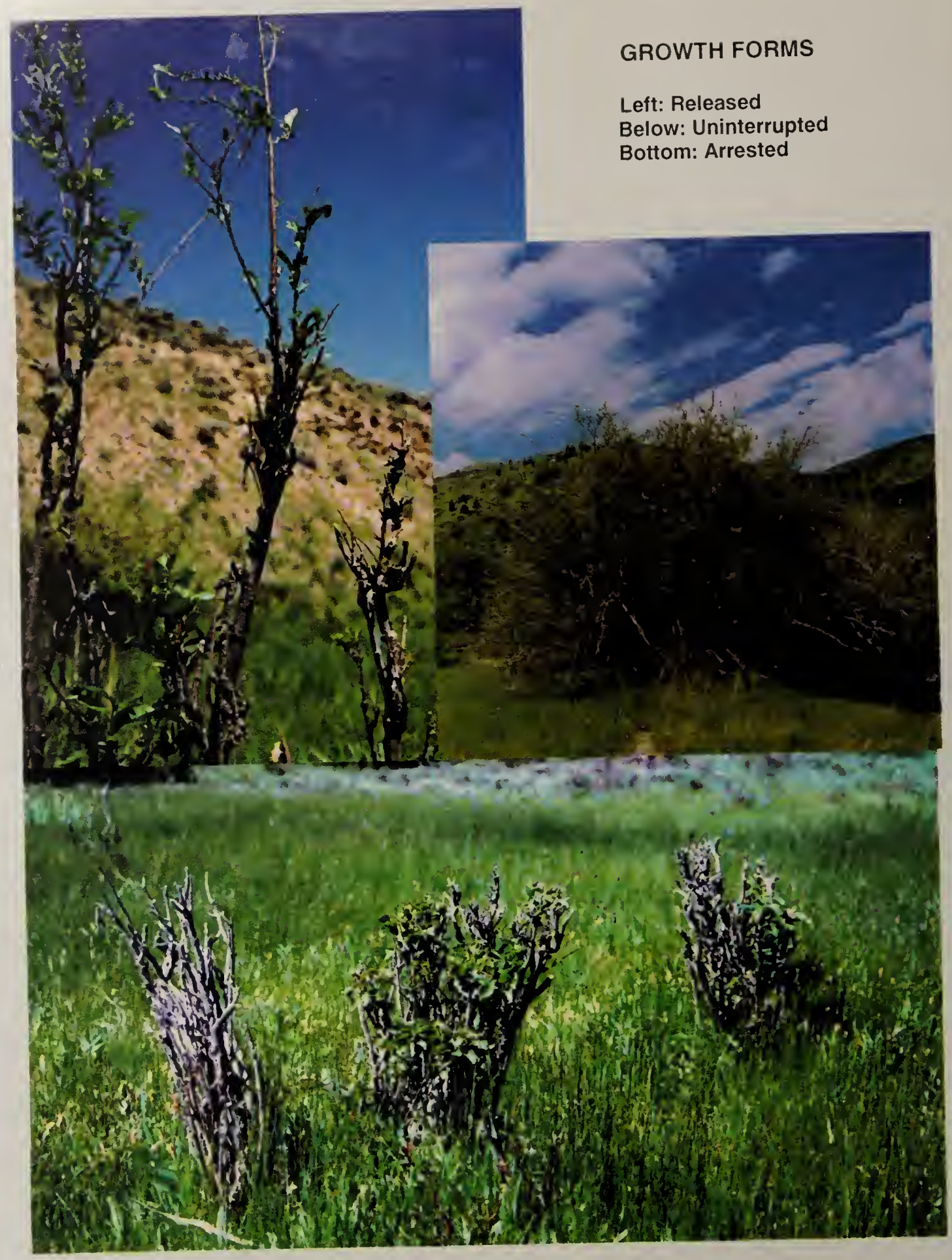
Additional Notes

Browse Evaluation by Analysis of Growth Form
Additional Notes

Browse Evaluation by Analysis of Growth Form
Additional Notes

GROWTH FORMS

Left: Released
Below: Uninterrupted
Bottom: Arrested